Recent Developments of Photonic Crystal Polarizers

T. Kawashima[1], Y. Inoue[1], H. Abe[1], T. Sato[1], and S. Kawakami[1,2]
1) Photonic Lattice, Inc., 2) Tohoku University, JAPAN.

Photonic crystal (PhC) polarizers are promising for many applications[1,2]: Small size, high performance (transmission >90% and high extinction ratio), etc. In this paper, we summarize recent topics of autocloned PhC polarizers. There are three keywords: Seamless coverage of the whole visible specrum by three (R, G, and B) polarizer chips; planar polarizer in the UV region (not known until now), and tolerance of the chip to high power lasers.

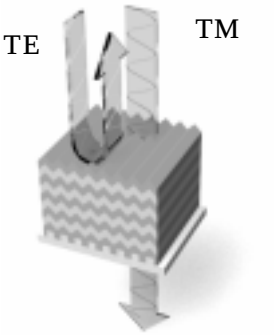

Fig. 1 PhC polarizer fabricated autocloning method. The devices for IR (λ= 1550 nm) [1] and for blue light (λ = 420-480 nm) [2] have been achieved.

(1) R, G, B polarizer chips: For industrial applications such as liquid-crystal light valves in PC-connected projectors, inorganic power-tolerant polarizers are important. We have developed R, G, and B PhC polarizers satisfying industrial requirements.

(2) UV operation: Performance down to λ= 285nm is confirmed. Details will be presented at the meeting.

(3) Power tolerance: The chip was tested at 1064nm (CW and pulse) and 820nm(Femtosecond pulse). Details will be presented.

[1] T. Kawashima et al., OFC, ThI2 (2003).
[2] T. Kawashima et al., PECS-V, Th-P31 (2004).